



# THE UNIVERSITY OF ARIZONA

TUCSON, ARIZONA 85721

COLLEGE OF LIBERAL ARTS

DEPARTMENT OF BIOLOGICAL SCIENCES

August 14, 1973

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**CR-133528**

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TO: R. Stonesifer, Technical Officer, NASA

FROM: D. Slaymaker, Administrative Assistant  
Proposal No. 327-Lowe, University of Arizona  
for Contract No. NAS5-21819

RE: Type I Report No. 3 ("Determination of Species"  
Proposal No. 327-Lowe), for the fourth two-month  
period

"The objective of this study is the determination of specific spectral signatures for dominant desert scrub plant species (and their soil surface backgrounds) with use of overflight coverage as in antermiediate link between permanent ground truth points and satellite imagery".

Our present status, is as follows:

1. We have completed two spectral data sequences for specific ERTS overflights on June 25 and July 31. Multispectral imagery was collected for ten major desert plant species as detailed in our interm report. A five foot long grey scale was included in each image and the direct reflectance values of each step recorded from an Exotech ERTS radiometer. These data are being used to assign reflectance value to specific densities in the resulting monospectral range transparencies.
2. Soil samples were also collected at a depth of 25 cm. beside each plant photographed as a measure of soil moisture content. This will be correlated to the apparent changes in plant activity between the two overflights which took place before and during the rain season.
3. Transparencies 7 in. square of the multispectral imagery are being produced for study under the video density analyzer provided by the University Office of Arid Lands. However, this

(E73-10890) DETERMINATION OF SPECIES  
(Arizona Univ., Tucson.) 2 p HC \$3.00

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Technical Officer  
NASA  
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-2-

apparatus has been down since July 20, detaining this phase of our work. Attempts were made to utilize Mr. Herbert Schuman's model in Phoenix, but it isn't working either at this time. Arid Lands expects their machine to be back in operation this week (ca. August 15).

4. We have received the specific frames for our June 25 overflight and ordered linear density duplications. These will be analyzed for possibly species determining density patterns projected from our ground-truth imagery.

We have also received notification from Aims Research Center of the June 26 overflight of a U2 aircraft, with 9" high resolution film, in support of our project. This imagery will be used to make good quality enlargements of our test site in an attempt to relate our test site in an attempt to relate our spectral reflectance data to the plant structure and shadow matrix of the scrub community. However we have not yet received the film. In telephone contact, the ERAP data facility explained the delay as due to a film shortage at the photo-lab. They did not know when the situation would be remedied.